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Total Anonychia Congenita and Microcephaly With Normal Intelligence: A New Autosomal-Recessive Syndrome?

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We report on 3 sibs (2 boys and a girl) with a previously apparently unrecognized combination of anonychia congenita and microcephaly with normal intelligence. The shape of the head is normal. Other anomalies include clinodactyly of the fifth fingers and bilateral single transverse palmar creases. Skeletal survey was normal in the 2 older children. These children and their first-cousin Iranian parents have widely spaced teeth. The children's first cousin also has total anonychia congenita and apparently small head. We review anonychia congenita, and conclude that the presently reported family with a "new autosomal-recessive disorder" provides further evidence of the heterogeneity of this condition.

KEY WORDS: absent nail, consanguinity, new syndrome

INTRODUCTION

The term "anonychia congentia" refers to the rare absence of fingernails and/or toenails [Der Kaloustian and Kurban, 1979]. It occurs per se or as a syndromal form in combination with flexural pigmentation [Verbov, 1975], lymphedema [Maisels, 1966], absence of patella and ectrodactyly [Lees et al., 1957], onychodystrophy with brachydactyly type B and ectrodactyly [Kumar and Levick, 1986], onychodystrophy with hypoplasia or aplasia of distal phalanges [Cooks et al., 1985], or with just onychodystrophy [Timerman et al., 1969]. It is one of the findings in nail patella syndrome [Der Kaloustian and Kurban, 1979]. In all the syndromal forms known so far, inheritance appears to be autosomal dominant.

Nonsyndromal anonychia is either partial or total. Partial anonychia may involve the thumbs only; this condition is an autosomal-dominant trait [Strandskov, 1939]. Otherwise, it may involve the second, third, and fourth fingers as an autosomal-recessive trait [Littman and Levin, 1964]. Total anonychia is relatively common and is inherited in an autosomal-recessive manner [Heidingsfeld, 1913; Listengarten, 1931; O'Neill, 1916; Timmer and Wildervanck, 1969; Mahloudji and Amidi, 1971; Hopsa-Havu and Jansen, 1973; Freire-Maia and Pinheiro, 1979].

Microcephaly with borderline or normal intelligence is a heterogenous condition. An autosomal-dominant form has been reported by Haslam and Smith [1979], Rossi and Battilana [1982], and Ramírez et al. [1983].

The most common autosomal-recessive nonsyndromal form is well-known: affected patients have a characteristic head shape with sloping forehead, and prominent ears and nose [Teebi et al., 1987].

Here we report on a consanguineous family of 3 sibs and their first cousin with total anonychia and microcephaly, with normal intelligence and some minor anomalies.

CLINICAL REPORTS

Patient 1

A 6½-year-old boy was born normally at term, after an uneventful pregnancy, weighing 1,800 g. Anonychia totalis was noted at birth. He had no neonatal problems. Psychomotor development was normal. Tooth development and sweating were normal. Teeth were widely spaced; around the third year of life dental caries became extensive. Examination showed mild backward slope of forehead with occipito-frontal circumference (OFC) of 48.5 cm (<2nd centile), weight of 21 kg (40th centile), and height of 111.5 cm (25th centile). Facial appearance was normal. The hair was normal. The teeth were widely spaced and decayed (Fig. 1a,b). Anonychia involved all fingernails and toenails (Fig. 2a,b). Clinodactyly of fifth fingers and bilateral incomplete transverse palmar creases were also noted. On the back of the chest there was a large portwine he-

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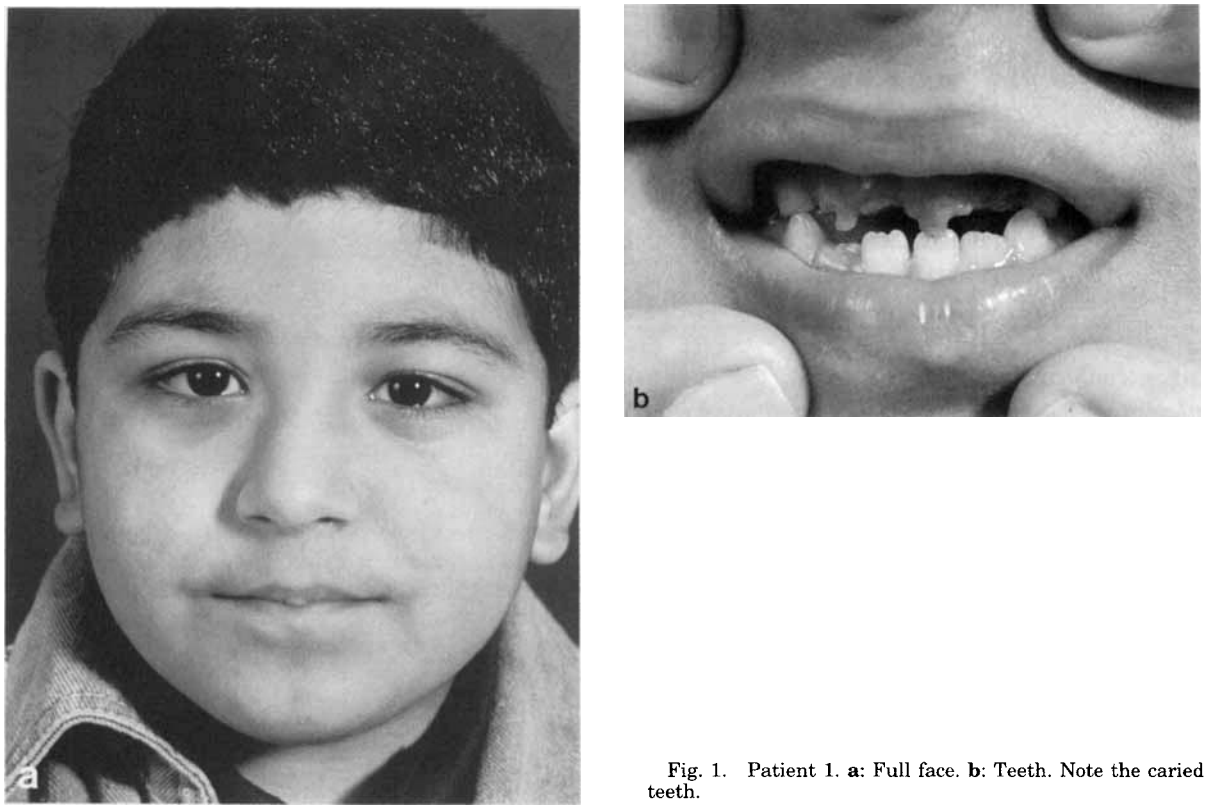

Fig. 1. Patient 1. **a**: Full face. **b**: Teeth. Note the caried primary teeth.

mangioma. The rest of the physical findings were normal. Skeletal survey showed no abnormalities, and bone age was normal.

Patient 2

This was the 4½-year-old sister of patient 1; pregnancy and delivery were normal. Anonychia was noted at birth. Psychomotor development was normal. Her OFC was 48 (2nd centile), weight 15.5 kg (25th centile), and height 102 cm (30th centile). Head shape and face were normal. She had widely-spaced teeth, anonychia of all fingernails and toenails, mild interphalangeal joint laxity, and incomplete transverse palmar crease on the right with complete transverse palmar creases on the left (Fig. 3a–d).

Patient 3

This was a newborn boy with anonychia of all fingernails and toenails. OFC was 33 cm, birth weight was 3.2 kg, and length was 49.5 cm.

Family History (Fig. 4, Family Pedigree)

The parents are first cousins from Iran. The father and mother were 28 and 22 years old, respectively, at

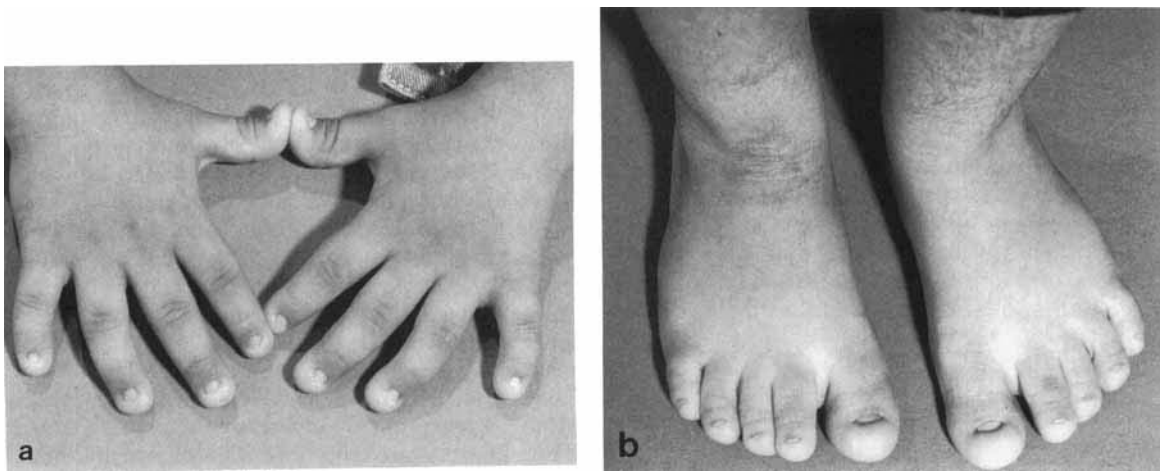

Fig. 2. Patient 1. **a**: Hands. Note absent nails and fifth finger clinodactyly. **b**: Feet. Note absent nails.

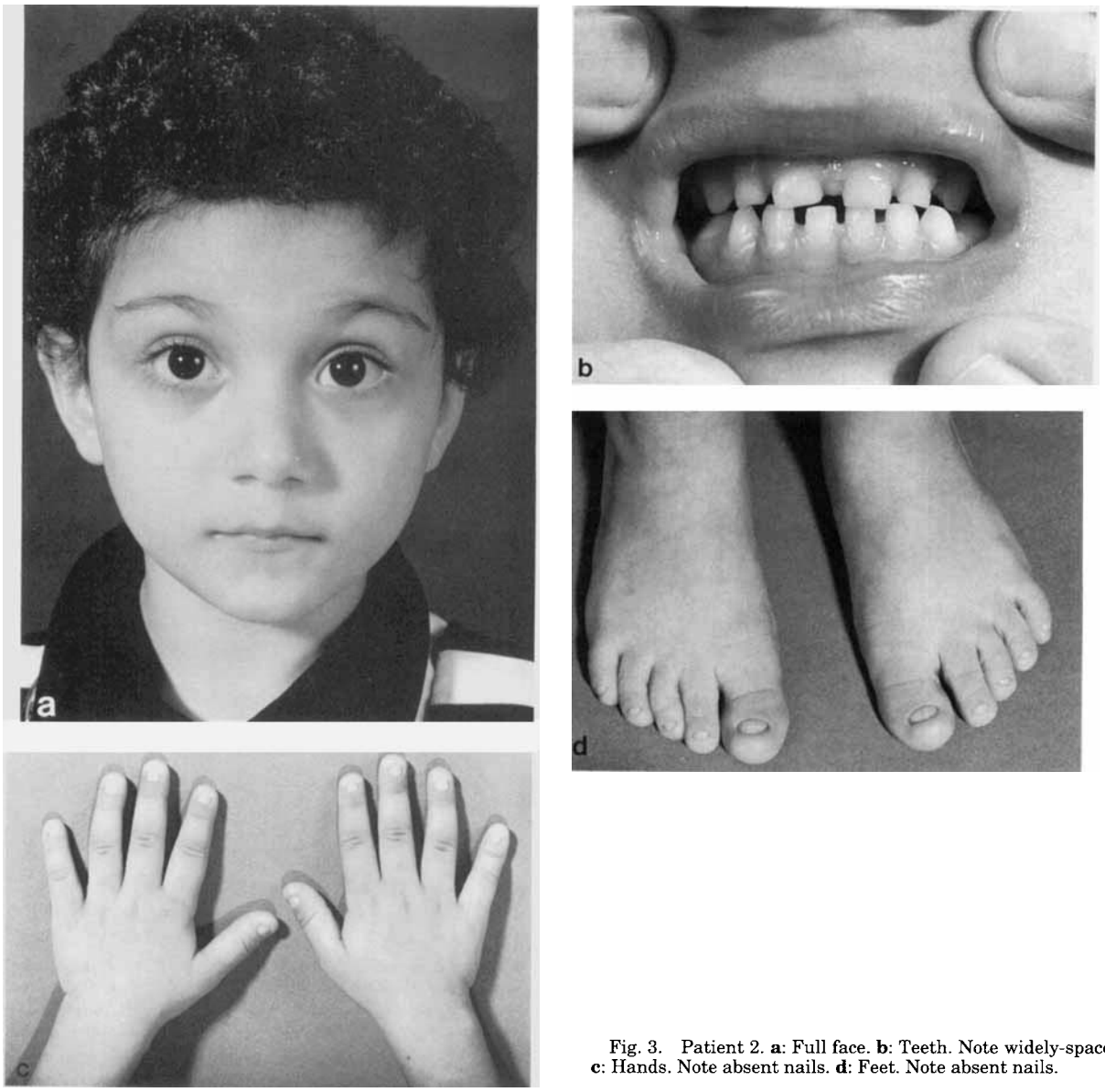

Fig. 3. Patient 2. **a**: Full face. **b**: Teeth. Note widely-spaced teeth. **c**: Hands. Note absent nails. **d**: Feet. Note absent nails.

the time of birth of their first child. They have a history of two early spontaneous abortions. The father's OFC was 57, and the mother's was 55 cm. They have widely-spaced teeth. A maternal female cousin of the children who lives in Iran has anonychia congenita and apparently small head; her parents are consanguineous.

DISCUSSION

These 3 sibs and their first cousin have total anonychia congenita similar to that described as an autosomal-recessive condition. To our knowledge, the association with microcephaly was not recognized previously. The presence of this constellation in 4 patients from two sibships favors the hypothesis that such an association is syndromal, rather than due to independent autosomal-recessive traits. In addition, the children have single transverse palmar creases and fifth-finger clinodactyly as minor anomalies. Inheritance is likely to be autosomal-recessive.

The widely-spaced teeth in this family appear to be an independent autosomal-dominant trait.

We conclude that the present family, with a possible "new autosomal-recessive disorder" with anonychia congenita as a major component, represents further evidence of genetic heterogeneity of anonychia congenita.

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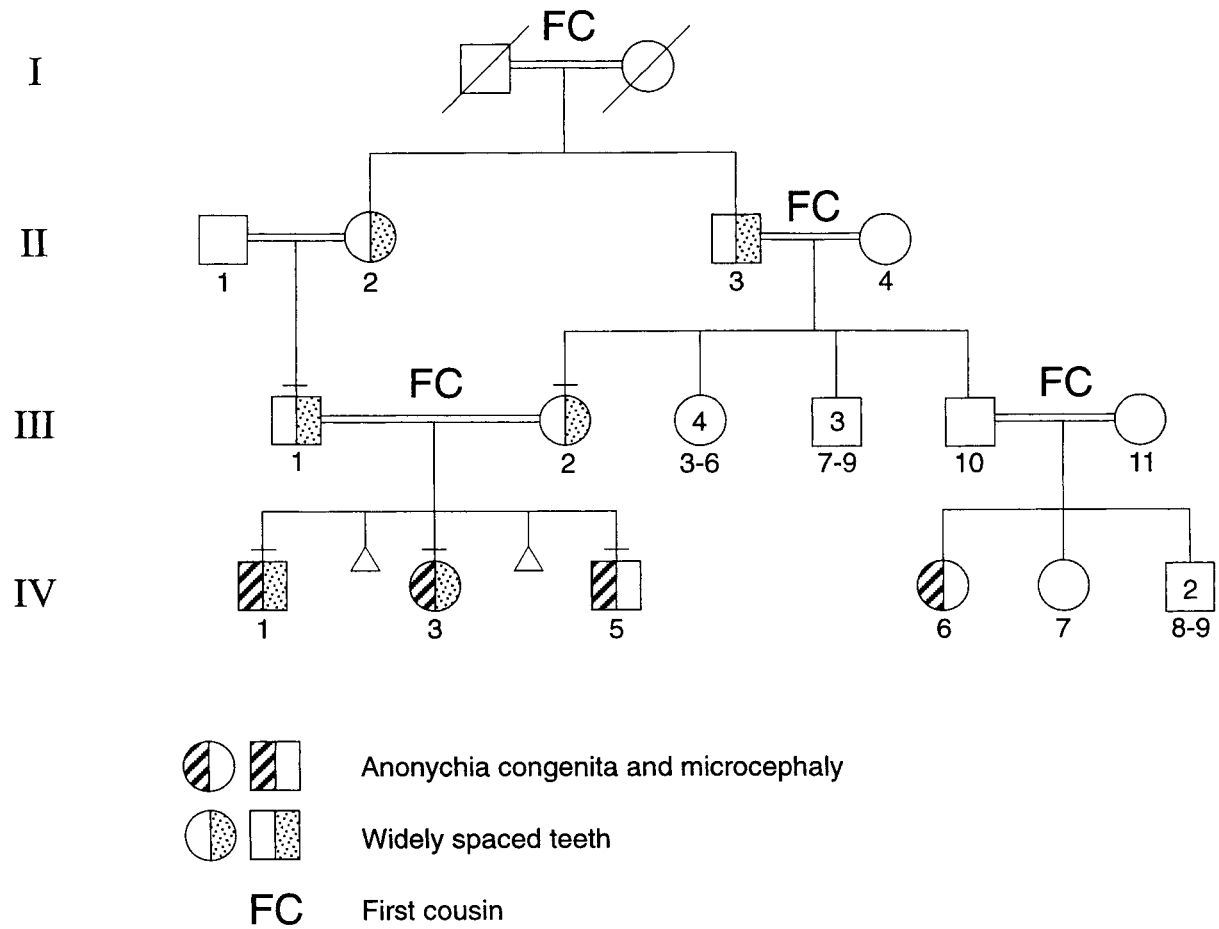

Fig. 4. Family pedigree.

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